Hierarchy History

In his role as an ISWA national committee member, **Professor Ian Williams**, of the University of Southampton, looks back at 40 years of the waste hierarchy in the UK, across Europe and beyond…

The year 1975 was a good one for debuts. *Paddington*, and *The Good Life*; *One Flew Over the Cuckoo's Nest and Jaws*; The Bay City Rollers' first Number One single, *Bye, Bye, Baby*, spent six weeks topping the UK charts, as did Queen's *Bohemian Rhapsody; and* Fulham's only appearance in the FA Cup Final ended in a 2-0 defeat to a West Ham team that remain the last all-English team to do so. And – perhaps most significantly – the European Union's Waste Framework Directive introduced the waste hierarchy into European waste policy for the first time.

What is "The Waste Hierarchy"?

IMMEDIATELY AFTER its introduction, the waste hierarchy had little impact on waste management practices. Implementation of the waste hierarchy was optional to member states; but there was an expectation that it would be included within national waste management legislation. In 1989, it was formalised as an ordered system of preferred management options in the European Commission's Community Strategy for Waste Management, and this approach was endorsed in the Commission's review in 1996.

In 2008, the European Parliament announced a new version of the waste hierarchy to its legislation, Directive 2008/98/EC, which member states must introduce into national laws. The Waste Framework Directive cancelled other directives, provides a general framework of waste management obligations and sets the basic waste management definitions for the European Union (EU). Article 4 of the Directive lays down a five-step hierarchy of waste management options, which must be applied by member states in this priority order: prevention, repairing for re-use, recycling, other recovery (eg, energy recovery) and disposal.

In line with the waste hierarchy, the 7th Environment Action Programme (EAP) was set out to guide European environment policy until 2020, and to set out a vision until 2050. The EAP identifies three key objectives, to:

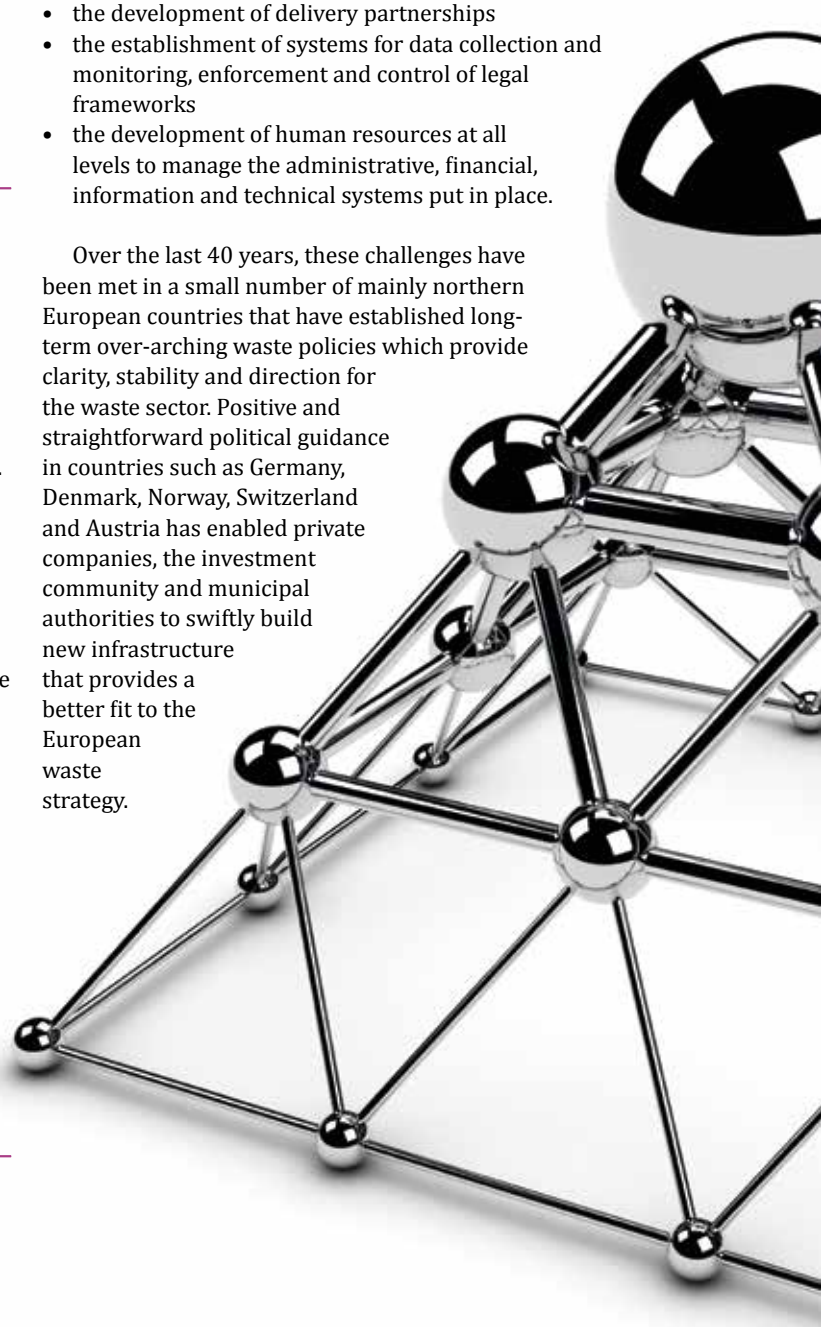
- protect, conserve and enhance the EU's natural capital
- turn the EU into a resource-efficient, green and competitive low-carbon economy
- safeguard the EU's citizens from environment-related pressures and risks to health and wellbeing.

The Waste Hierarchy In Practice

IT IS a complex and demanding task to apply the waste hierarchy to a country's waste management practices. Many challenges must be met, including:

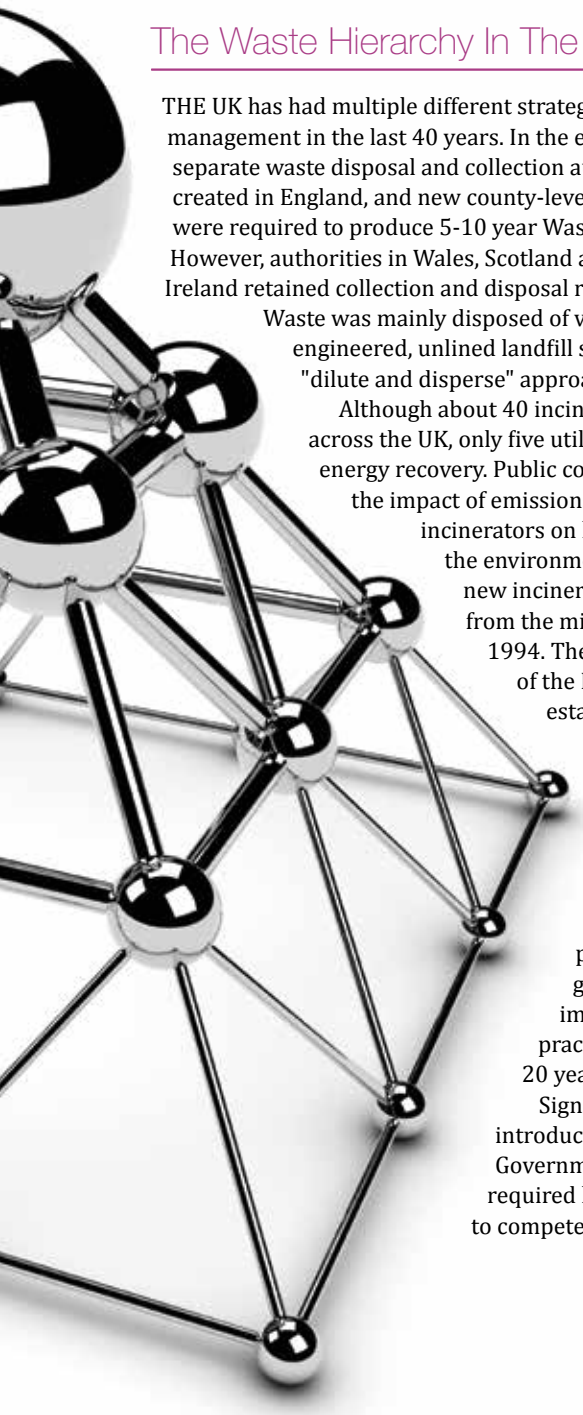
- the development and implementation of a suitable waste management strategy
- the establishment of suitable collection and sorting systems for different waste streams
- funding and construction of appropriate treatment and disposal facilities
- the development of delivery partnerships
- the establishment of systems for data collection and monitoring, enforcement and control of legal frameworks
- the development of human resources at all levels to manage the administrative, financial, information and technical systems put in place.

Over the last 40 years, these challenges have been met in a small number of mainly northern European countries that have established long-term over-arching waste policies which provide clarity, stability and direction for the waste sector. Positive and straightforward political guidance in countries such as Germany, Denmark, Norway, Switzerland and Austria has enabled private companies, the investment community and municipal authorities to swiftly build new infrastructure that provides a better fit to the European waste strategy.



In practice, most countries have regarded the hierarchy as a "ladder" and have sought to climb it step-by-step from the bottom (landfill) to the top (waste prevention). Once a strategy has been developed and agreed, a policy has to be formulated to deliver the strategy – this requires legislation to be created, passed and enforced; infrastructure to be built; services and training to be provided; markets to be created and developed; products to be redesigned; and entrenched values and behaviours to change.

On top of this, technological change has been so fast that society has struggled to keep up and waste management is just one of multiple issues that authorities need to address, including security, healthcare, education, transportation, social welfare and so on. An integrated approach for waste reduction using the hierarchy as a guiding principle requires all these factors to come together. With so many other competing issues to address, it is probably no surprise that the majority of EU countries have taken a slow, steady and stepwise approach to introducing the principles of the waste hierarchy into their systems for waste management.



The Waste Hierarchy In The UK

THE UK has had multiple different strategies for waste management in the last 40 years. In the early 1970s, separate waste disposal and collection authorities were created in England, and new county-level authorities were required to produce 5-10 year Waste Disposal Plans. However, authorities in Wales, Scotland and Northern Ireland retained collection and disposal responsibilities.

Waste was mainly disposed of via poorly engineered, unlined landfill sites using the "dilute and disperse" approach.

Although about 40 incinerators operated across the UK, only five utilised significant energy recovery. Public concerns about the impact of emissions from waste incinerators on human health and the environment meant that no new incinerators were built from the mid-1970s until 1994. The Department of the Environment established the Landfill Practices Review Group, and this led to more than 30 "Waste Management Papers" that provided a guidance for improved landfill practices for the next 20 years or so.

Significant changes introduced by the Thatcher Government in the 1980s required local authorities to compete with private sector providers for the provision of waste collection and cleansing services. The intention was to facilitate the delivery of more cost-effective services. However, an unintended outcome was that the capacity of major urban areas to manage waste in a strategic fashion was obstructed by the abolition of large metropolitan authorities. Maintaining an overall national direction of travel for waste management consequently became more difficult as individual authorities tended to choose the cheapest approach for their social and demographic circumstances, rather than working together in the national interest.

In the 1990s, escalating public interest in sustainable development and unease about environmental degradation, combined with new treaties and powers for the European Commission, led to significant and wide-ranging changes to environmental and waste legislation. Tougher regulatory regimes for waste management were introduced. EU Directives led to adoption of recovery targets and compliance schemes for packaging, the introduction of stringent emission standards for municipal incinerators, and regulations for the transportation of hazardous wastes. These changes had little overall impact on municipal waste management in the UK, where landfill continued as the dominant disposal method. However, the overarching philosophy had changed, with a focus on containment of leachate and minimisation of emissions to air.

The most significant changes occurred in the 2000s, when the impacts of the EU's Landfill Directive started to become apparent. The Directive set steadily increasing targets for reducing the amount of biodegradable MSW disposed via landfill, combined with similar incremental targets for increased composting and recycling. The Landfill Tax, introduced in 1996, increased to reach values that meant landfill was becoming uneconomic.

Individual local authorities introduced separate collections for recyclables and garden waste combined with roll-outs of home composting schemes. Local authorities and organisations, such as WRAP, encouraged people to take control of recycling in their own homes by providing public education and awareness-raising programmes and incentives.

Since 2000, the UK has made substantial changes to the way in which it approached municipal waste management. The EU's Landfill Directive was a key driver for the Waste Strategy 2000 for England and Wales, which in turn was a catalyst for the development of municipal waste management strategies by local authorities. There was a general movement away from disposal via landfill and an increase in recycling and composting; around 44 percent of household waste was recycled in England in 2012/13, compared to just 11 percent in 2000/01. Nevertheless, most performance indicators (eg, disposal to landfill, recycling rates) show that the UK does not perform well when compared to similarly developed countries in Europe. The EC's official statistics show that Switzerland achieved zero waste to landfill in 2007, with Germany and Sweden close behind.

However, a combination of factors has meant that the rapid progress of the early-mid 2000s has not been maintained. The household waste recycling rate has only increased slightly since 2010 and the prevailing rate of increase is probably insufficient to meet the 50 percent

EU target by 2020. There are marked differences in the proportions of MSW destined for landfill, recycling and incineration at national, regional and sub-regional scales in the UK. There has been an increase in the number of incinerators and anaerobic digestion plants planned, but little infrastructure has actually been built. To complicate matters, the government announced (in 2013) a cut-back of resources to departments that support waste policies, effectively leaving waste policy and strategy to the whims of the market.

A ternary plot that demonstrates how changes in waste management practices have occurred in the UK is shown in Figure 1. This timeline shows that although regular change has been a feature of UK waste policy, progress away from landfill disposal has been slow but steady. It is apparent that UK waste management policy, practice and infrastructure have not been consistently aligned with the aims and principles of the waste hierarchy. The wide range of strategies and actions in place demonstrates a lack of a long-term overarching policy and strategy.

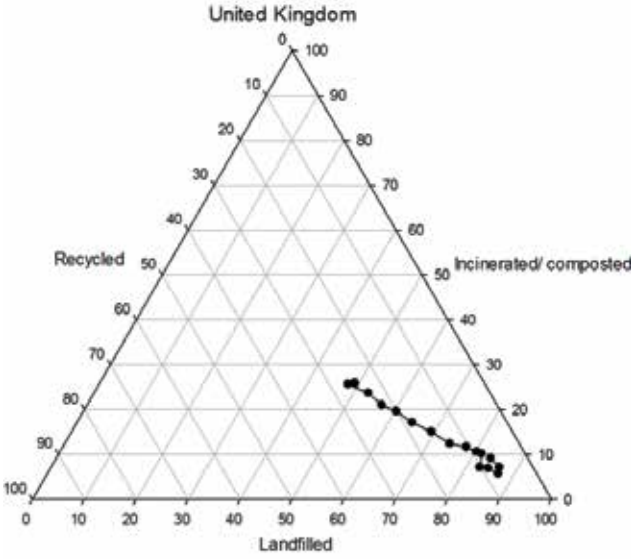


Fig 1. Changes to UK's municipal waste management practices 1995 to 2011, (% by weight), data from European Commission (2011)

The Waste Hierarchy In Europe

EU-27 MUNICIPAL waste recycling and composting rates increased to 40 percent in 2008 compared to 16 percent in 1995, whilst waste landfilling rates decreased from 62 percent to 40 percent over the same period (source: Eurostat). Since the introduction of the waste hierarchy, northern European countries have made most progress in terms of moving away from landfill whilst countries in the east and south have made little or no progress. The reasons for this are complicated, but include the availability of finance, political and social will, technical skills, suitable planning and legal frameworks, and a wide range of other social, demographic, cultural and administrative factors.

Many countries in eastern Europe have only recently joined the EU and so have not been required to use the hierarchy as a guiding principle. In addition, the principle of subsidiarity, which is fundamental to European decision-making, determines that decisions should be taken as closely as possible to the citizen, meaning that national strategies for waste management vary enormously between EU member states.

Nevertheless, there are signs that the hierarchy is slowly starting to be used more widely in practice across Europe as originally intended. Although few EU countries reduced their municipal waste output between 2001 and 2010, there are indications of a swing away from landfilling towards preferred waste management approaches. The number of countries that landfill more than 75 percent of municipal waste output has clearly decreased, while the numbers recycling more than 25 percent of their municipal waste recorded the opposite trend (nonetheless, the bulk of EU countries still landfilled more than 50 percent of their municipal waste in 2010).

Twelve countries increased the percentage recycled by more than 10 percent between 2001 and 2010, and another 10 achieved increases of between five and 10 percent. Progress in enhancing recycling rates is primarily due to trends in recycling of materials, with 19 EU countries achieving fairly substantial increases in their material recycling rates since 2001. However, there has been relatively little change in national biowaste recycling rates, indicating a need for a stronger emphasis on biowaste recycling. Intriguingly, in the majority of countries where regional recycling data is available, there appears to be sizable variation between different regions, suggesting that regional and local policies have an important effect on municipal waste recycling rates.

An International Challenge

FORTY YEARS after the introduction of the waste hierarchy and some things have not changed. *Paddington* is more popular than ever; *The Rocky Horror Picture Show* is still playing to packed audiences; classic 70s shows still appear regularly on TV; as they did in 1975, with their best-known single, Queen introduced us to the New Year with a gig screened live on BBC1; and, at the time of writing, it is still theoretically possible that Fulham and West Ham could still meet in this year's FA Cup Final. Plus ça change, plus c'est la même chose.

Waste management has changed significantly in some parts of the world since 1975, and stayed broadly the same in others. In some parts of the EU, the waste industry has become progressively more sophisticated and technological, and wastes are increasingly regarded as valuable resources to be utilised and exploited commercially, rather than dumped and forgotten. This relatively recent change of emphasis reflects society's desire to secure and manage resources in a more sustainable fashion and to protect the environment, locally as well as globally.

The changes we have seen over the last 40 years have been propelled by a combination of factors, including political strategy, legislation, increased environmental awareness, the need to decouple waste production from economic growth, and a common drive to promote a more sustainable way of living. Even so, there will clearly have to be a substantial ramping up of activities in many member states if the waste hierarchy's original objectives are to be universally achieved. ■